



STREET LEGAL  
INDUSTRIES, INC.



## ***Commercial Data Sets Fact Sheet***

### ***Background***

Managing the risks posed by climate change and extreme weather to energy production and delivery is a challenge to communities worldwide. As climate conditions change, populations will shift, and demand will re-locate; and networked infrastructures will evolve to accommodate new load centers, and, hopefully, minimize vulnerability to natural disaster.

Climate effects such as sea level rise, and increased frequency and intensity of natural disasters, force populations to move locations. Displaced populations create new demand for built infrastructure that in turn generates new economic activity that attracts new workers and associated households to the new locations. Infrastructures and their interdependencies will change in reaction to climate drivers as the networks expand into new population areas and as portions of the networks are abandoned as people leave. Thus, infrastructures will evolve to accommodate new load centers while some parts of the network are underused, and these changes will create emerging vulnerabilities. Forecasting the location of these vulnerabilities by combining climate predictions and agent based population movement models shows promise for defining these future population distributions and changes in coastal infrastructure configurations. By combining climate and weather data, engineering algorithms and social theory it has only recently been possible to examine electricity demand response to increased climactic temperatures, population relocation in response to extreme cyclonic events, consequent net population changes and new regional patterns in electricity demand.

### ***VERDE Advantage***

Public and commercial application of NOAA developed products such as climate observations, weather products, and datasets are underutilized by public decision makers, infrastructure asset owners, or the general public. Communities realize the risk posed by increases in storm intensity, flooding, and heat waves. However, communities lack understandable models targeted to stakeholder questions that are affordable, on-demand, interactive, and understandable.

VERDE combines situation awareness and modeling to provide on a web-streaming platform based on open geospatial standards look-ahead forecasts and analysis. Over the last ten years, the VERDE system has continued to evolve to present complex geo-spatial data to first responders and modeling results to planning stakeholders through the Regional Risk Assessment Program (RRAP) sponsored by DHS S&T. Phase I deliverables include

establishing the feasibility of the service streaming on-line services simultaneously to workstations, smartphones and tablets. The Website in Phase I will gather requirements from user focus groups and demonstrate technical feasibility. Phase II objectives will include communication of critical analytic data to University of Tennessee partners and identifying new desirable functions for the Phase II deliverable.

The wide spread application and use of NOAA developed products including future climate scenarios, weather products, and infrastructure impacts have not been used as widely or as directly by public decision makers, infrastructure asset owners, or the general public because of the difficulty in exploring the data trade space without expensive subject matter help in manipulating the data or expressing their queries to the system. Communities have begun to realize the risk posed to infrastructure and neighborhoods by predicted increases in storm intensity, flooding, inundation, heat waves and wildfires and the disruption they cause to the energy supply and its dependent infrastructure. However, communities do not lack good weather reports or seasonal projections. They lack integrated models applied to on-the-ground stakeholder questions to be made available affordably on-demand, interrogated interactively, and understandable without extensive training.

### ***Conclusion***

Almeria Analytics' (AA) proposed solution is to use a variant of the Visualizing Energy Resources Dynamically on Earth (VERDE) system as the communication platform and as a format to integrate emerging impact models. AA principals are named inventors of VERDE (developed over the last decade at DOE's Oak Ridge National Laboratory) and AA has obtained licenses for the key VERDE patents.

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